SOME REMOTE SYMPTOMS AND EFFECTS OF CHOLECYSTITIS.

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I have been greatly impressed for many years with the pathological changes occurring in the various tissues and organs of the body as the result of chronic inflammatory disease of the gall bladder or ducts. As the result of much clinical work and many observations, the diagnosis of gall bladder disease has been greatly elucidated, yet, I feel that there is much to be learned along diagnostic lines by a closer study of the remote effects of disease in the gall bladder and ducts.

It will be the object of this communication to call attention to the remote effects of cholecystitis, and the tremendous bearing this disease has as a causative factor in destructive disease of other and more important organs. There is a great paucity of literature upon this subject, and, like many other phases of modern pathology remained for the modern abdominal surgeon to clear up and establish as the result of his daily work and observations. It was my fortune to become identified with a not inconsiderable number of gall bladder cases early in my professional work, and have been observing with the greatest interest the effects of gall bladder disease upon the heart and kidneys, especially the latter. Years ago I was impressed by the fact that practically all the gall stone cases gave albumen reactions in the urine and more or less casts. This was a source of great anxiety to me, until I learned that the kidney changes, promptly disappeared after operation in all except the more aggravated or very long-standing cases.

As early as 1896, I observed and called attention in a paper read before one of our local societies to the great prevalence of cardiac changes in cholecystitis. These at the time were considered the result of bile circulating in the blood and the functional manifestations so common as the result of a sympathetic reflex through the pneumogastric. I now have every reason to believe that most of the cardiac symptoms and changes found in gall bladder disease is secondary to the renal changes produced by the elimination of irritating substances in biliary infections. However, I am not sure that all the changes in the heart are caused in this way. The number of endocardial changes in chronic biliary infection are too pronounced to be coincidental, and the long-continued, though slight, amount of bile circulating in the blood undergoes such chemic changes as to produce endocardial proliferations and finally interference with consistent valve action.

There is no literature directly on the subject as far as I have been able to learn. The following points are in the nature of side lights and may be interpreted as bearing in some way on the subject. I am sorry that the time is so short that we cannot make some laboratory experiments upon the subject.

ANALOGIES.

(*a*) Nephritis is a constant complication of diphtheria. It has been experimentally produced in guinea pigs by inoculating them with the toxines of diphtheria. (Osler, Infectious Diseases, page 414.)

(*b*) Nephritis occurs in acute rheumatism. The diplococcus is freely excreted in the urine of persons suffering with acute rheumatic pericarditis. Nephritis may be produced artificially in rabbits and cats by the inoculation with the diplococcus, as observed by Pain, Osler and Vernon Shaw. (See Osler, page 701.)

(*c*) Kidney complications occurred in six, in a series of 1674 cases of erysipelas.

(*d*) Typhoid fever, typhus fever, smallpox, and lobar pneumonia.

From these facts it is not unreasonable to suppose that the same complications may follow cholecystitis.

The Role of the Bile.

Composition of the Bile:

Water	91.68
Mucous and pigment	.129
Glycolate of sodium	3.03
Taurocholate of sodium	.87
Soaps	1.39
Fat	.73
Lecithin	.53
Cholesterin	.35

Bile absorbed by the Lymphatics gets into the circulation where it undergoes uncertain chemical changes, which result in the formation of tox-albumins. The symptomatic effect of this is to produce slow pulse, slow respiration, low temperature, irritation of the skin, lassitude, headache and coma. Is it then possible for the delicate renal mechanism to escape?

When the liver is altered, the extractive matters accumulate in the blood. Biliary albumens may produce the following effects:

(*a*) Alteration of fixed kidney cells.
(*b*) Reflex vascular disturbances.
(*c*) Exudation and diapedesis.

Microbic poisons are albumenoid while circulating in the blood, but in the urine they are alkaloid. May it not be the function of the kidney under these conditions to break up the complex albumenoid molecules and convert them into alkaloids? Now should an organic radicle be replaced by an H atom, a poison is produced. (Roger, page 133.)

The chemical composition of bilirubin is C-16, H-18, N-2, O-3. Bilifuchsin is: C-16, H-20, O-4. Biliprasin is: C-16, H-22, N-2, O-6. These organic radicles combined with Ca form biliary calculi, but if one of these radicles should be replaced with an H atom, a poison is formed. Example: Nascent H converts bilirubin into C-32, H-44, N-4, O-7 (Orobilin), or in the feces, stercobilin. Taurocholic acid is an example of the substitution of an organic radicle by an H element: H^2 H^4 SO^2 C^2 (Bartlett, Organic Chemistry).

Musser says that albumen can almost always be found in the urine in cases of infected gall bladder.

Cases of acute infectious icterus of a benign form have long been recognized and epidemics described by French observers, and by Weiss in '66.

In 1886 Weil emphasized the acute onset, extremem development of jaundice, tender and enlarged spleen and accompanying nephritis.

Jaeger described a baccillus of the proteus group as the pathogenic factor in a garrison epidemic at Ulm, in 1892. He named it the bacillus proteus fluorescens.

"In infectious icterus the kidneys show a diffuse tubular nephritis."—Weil. "The albuminuria is usually of a considerable grade and hyaline and granular casts are present in large numbers. The urine also contains bile pigments and sometimes red blood cells." —Weil. "The nephritis gradually clears up." The tendency to hemorrhage from the various organs and mucous membranes of the body has long been noted as a result of long existing icterus. This is evidently twofold in its nature, occurring from the operative wound as it sometimes does, the element of mucus admixture which retards coagulation, is a factor. But the altered blood vessels and circulatory stasis is no doubt the chiefest cause. Short of pronounced jaundice there is a tendency to bleed freely from mucous membranes in chronic catarrhal disease of the gall bladder. I have been able to establish a clear relationship between gall stones and menorrhagia where a thorough examination fails to reveal a local source of an existing menorrhagia, I strongly suspect a lesion of the gall bladder, probably calculi.

Very slight, I may say imperceptible, increase in the absorption of bile will increase the normal menstrual flow. In my experience it requires rather aggravated icterus to give rise to kidney hemorrhage. In the aggregate, symptoms caused by the circulation of bile in the blood we have the clinical picture of so-called biliousness of the ancient authors, and of the laity today, viz, headache, drowsiness, fatigue, furred tongue, neuralgia, cold feet and constipation. This combination of symptoms really toxic in character, has the greatest significance for the surgeon or internist. What is biliousness, so-called? Simply the retention in the blood of toxic substances of varied origin. It has no connection with the liver proper, but it is an evidence of trouble in the biliary passages or gall bladder, viz: absorption of bile from impeded outlet, this absorbed bile in turn irritating the kidneys which interferes with the elimination of important toxic principles from the blood. These toxic principles being the ordinary ones eliminated by normal kidneys, plus those added by the bile, directly and indirectly, for indirectly we have many stercoraceous ferments formed, the absorption of which still further hampers the kidneys. Where the ancient portion of calomel relieves in part this condition, it does so by removing part of the intestinal ferments and indirectly lessening the burdened kidney, also directly by increasing the kidney action. The logical deduction from the premise, which practical experience abundantly proves is that recurrent biliousness, so-called, is a positive indication of gall bladder disease, most likely extending to the ducts.

What we want for a time is less about cholelithiasis and more about chronic cholecystitis and cholangitis; these are, in my judgment, as numerous as where calculi form, and between the two, what a startling chapter figure it makes in human pathology! I dislike to appear to speak immodestly, but truthfully I do not believe the half has been told. Fourteen years and one month ago it was my privilege to state, at the meeting of this society, in this city, that, "We should consider any appendix once so affected as to deserve the name of appendicitis whether from tubercle or trauma (enterolith), a lastingly diseased structure; and fancied cures, but quiescent state the result of very easily recognized conditions." These views were considered too radical that day. I venture to say the same of inflammatory disease of the gall bladder and ducts today. If I can be cured of infections of the gall bladder and calculi by medicinal agents, I don't want to be cured that way. I want the gall bladder and ducts drained so as to get a lasting cure. I would wish to avoid cardiac and renal changes which are inevitable and finally fatal.

The internist should take a large pencil and score down syphilis, alcohol and rheumatism as causes of Bright's disease, and raise chronic infections of the gall bladder from cholelithiasis and other causes to first place.

The recurring bilious, and families with inherited liver disease, headache and malaria, should have a simple cholecystotomy and drainage. Likewise the dejected and melancholic. In addition to the usual symptoms of gall bladder disease many valuable diagnostic signs can be found in the enormous category of remote symptoms and effects.